DOCUMENT RESUME

ED 298 924 IR 013 309

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TITLE Innovation on Command: Instructional Development and Educational Technology in the Soviet Union.
PUB DATE 84
NOTE 17p.; In: Instructional Development: The State of the Art, II; see IR 013 273. For volume I, see ED 292 444.
PUB TYPE Historical Materials (060) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Educational Technology; *Faculty Development; Faculty Evaluation; Foreign Countries; Futures (of Society); Higher Education; Inservice Teacher Education; *Instructional Design; *Instructional Development; *Instructional Innovation; Models
IDENTIFIERS *Qualification Raising Programs (USSR); *USSR

ABSTRACT

This chapter presents the history, philosophy, and methodology of instructional development and instructional technology in the Soviet Union. It begins by analyzing the structure of the educational bureaucracy in the USSR and explaining the pathways through this structure through which educational decisions are made, and through which instructional materials are designed. The development of educational technology in the USSR is described, including the major successes and failures of the institutions and agencies involved in Soviet educational technology and instructional development, in particular the work of the Scientific Research Institute for School Equipment and Educational Technology (NII SHOTSO), and the Soviet program of "qualification raising" in institutions of higher education. Russian instructional development models are described, and misunderstandings between American and Soviet instructional technologists are discussed. Finally, the scope and future of Soviet instructional development are considered, and it is suggested that progress will be slow because the system, while impressive, is not very flexible. The text is supplemented by 64 references, 15 in English and 49 in Russian. (Author/EW)

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Chapter 36

Innovation on Command: Instructional Development and Educational Technology in the Soviet Union

Stephen T. Kerr

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In order to know how to perform our jobs in the best way possible, we must know the very latest findings from research and from developmental studies. This means, of course, not only those findings from American scholars and practitioners, but from scholars and practitioners wherever they may happen to work. The present article discusses such findings from the USSR, together with the environment within which these findings have validity and from which they have originated.

INTRODUCTION: THE WESTERN VISITOR MISLED

The Western visitor to a Soviet educational institution might easily be led astray in trying to start a conversation about instructional development. First, the translation of the term itself would likely cause difficulty. The Russian language now includes a number of terms that correspond reasonably well to "educational technology" or "audio-visual media," but it lacks a single, widely-accepted term for what we call "instructional development." A second problem would be the lack of a well-defined occupational group concerned with instructional development issues, organized into professional associations and publishing journals dealing exclusively with their field. Individuals involved with instructional development questions exist, to be sure, but it is far more difficult to identify them and tag them with a convenient title than it is in the West. Finally, at a deeper level there are a number of distinctive features of the Soviet educational system--a popular fascination with technology and its effects; a strange mixture of centralized, bureaucratic government planning with an almost feudal administration pattern in higher education; and a dramatically high degree of public prestige attached to teaching positions in soviet universities and institutes--that give a very unfamiliar cast to the role played by instructional development in the USSR.

Facing this combination of translation problems and cultural differences, the hypothetical Western visitor might understandably leap to the conclusion that the institution is promoting some monstrous KGB cover-up of instructional development in the service of Soviet military conquest, or perhaps s/he will merely write off the experience with a shrug and a conclusion that Soviet educators are not really involved in instructional development.

But while the communication problems are real, they can be overcome through perseverance. For there does exist in the USSR a well-developed network of organizations, social structures, and administrative arrangements for dealing with the same problems that are commonly handled by ID programs and practitioners in the West. A rapidly-expanding educational materials and equipment industry, for example, serves Soviet educators at all levels and a broad system of "qualification raising" in teaching encourages them to use resources more effectively in their classes.

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These two interconnected systems--for technology and for the improvement of instruction--form the basis for ID in the USSR. Both these systems have grown rapidly over the past decade, both are apparently priority targets for further swift development by the Soviet leadership, and both are therefore currently topics of some discussion in the Soviet educational press and journals. These attempts to expand the application of educational technology in the Soviet Union, however, have not met with unqualified success; there have also been some notable problems with implementation. The result is a program that mirrors the country as a whole in its broad conceptualization, its centralization, its occasional stunning successes, and its generally low level of efficiency.

Plan of the Chapter

The intent here is first to note briefly a number of characteristics of the Soviet educational system which are unique or which may be of help to us in understanding the position of instructional development in the USSR. The next major portion of the chapter describes how educational technology has developed in the USSR and what some of the major successes and failures of these agencies have been. Next, the specific role of ID and "qualification raising" programs in Soviet higher education is discussed; the purpose of this section, again, is to describe the current system, and to outline its achievements and problems. This section also includes a brief examination of what Soviet and American educational technologists do and do not know about one another's work. Finally, a concluding section summarizes the information at hand about Soviet ID efforts and evaluates it in the particular context of Soviet society. The focus of interest here is on the extent to which "innovation on command" works now and may work in the future.

CONTEXT: ESSENTIAL FEATURES OF SOVIET EDUCATION

Structure

The USSR provides free education for all citizens through grades K-10 of the school system. Following grade 8, students may choose to complete their secondary education at a general secondary school (which prepares students for either further education or a job), a vocational school (offering training, usually in a manual job skill, combined with the final two years of school), or a specialized secondary school (which also offers job training, but of a higher order, and the complete high school course). The guarantee of a full ten-year education for all is a recent development in the Soviet Union, having been written into law only in 1973.

After secondary school, about 20% of Soviet young people continue with their education as students in universities or institutes. While the number of openings in higher education has increased over the past 15 years, the increase in this area has not kept pace with population growth. Even fewer of the Soviet university graduates can continue to graduate school where, after two to four years of further study, they receive a "candidate" degree, roughly equivalent to an American doctorate. The degree of "doctor" is granted only after years of productive scholarly work, and remains a rarity among the Soviet professorate. Entrance to all educational institutions above the secondary level is thus highly competitive, and completion of higher education provides Soviet young people what is often described as a "passport to the good life."

Above the elementary level in the USSR, teaching is often still synonymous with lecturing. Classical European (especially French and German) models of what good teaching consists of predominated in the Soviet Union even following the Russian Revolution of 1917, and teachers and students still spend a much higher percentage of their time in class than would be the case in the United States. A Soviet university student may put in as many as 36 hours of classroom time per week. Courses are relatively narrow and specialized; a first-year student in journalism, for example, would likely be taking only journalism courses, plus perhaps a required course on Marxism-Leninism or Party History. The notion of a liberal-arts education, and consequently of large, introductory courses for students from diverse disciplinary backgrounds, is unknown.

Centralization

The USSR Ministry of Education in Moscow plans the curriculum of all schools through the general-secondary level. As a result, central administrators can rightly claim that they know what is being taught at any time in any part of the country. The situation in specialized secondary schools and higher educational institutions is not quite so uniform. Indeed, many such institutions report not to the Ministry of Higher and Specialized Secondary Education, but to other ministries which run schools and institutes for the preparation of personnel. The Ministry of Ferrous Metallurgy, for example, coordinates its own secondary schools and higher educational institutes for the preparation of steel mill technicians and engineers.

While most decisions regarding curriculum and even teaching methods are made in Moscow, the Ministries of Education (and of Higher and Specialized Secondary Education) in each of the 15 union republics of the USSR (the Ukraine, Georgia, Lithuania, etc.) have some influence over local education. National languages, for example, are still taught in republic schools, and some decisions regarding that teaching are made on the republic level. Finally, there are local educational agencies on the levels equivalent to counties and cities that have a minor say in curriculum decisions which deal with local issues.

Research and Development

While Soviet education is centralized, one should not get the impression that there is monolithic agreement among Soviet educators about the definition of educational programs or about how to carry them out. In fact, there are a number of diverse groups within the Soviet educational establishment. The **ministries** have already been noted. A number of government **committees** have key roles in making policy and planning for future developments. The **Academy of Pedagogical Sciences** and its associated research institutes are responsible for the overall coordination of educational research and development. And the **Communist Party of the Soviet Union** (CPSU), through both national and local organizations, plays the "leading role" in deciding the general direction for the country's educational system.

Research and development in Soviet education differs from that found in the West in several important respects. First, there is very little work done on education in the USSR that does not have some immediately practical cast. Often the impetus for a research project comes from a non-educational ministry or even from a factory. For example, much research has been done recently on vocational education and on how to help young people choose "socially valuable" professions--research occasioned by a labor shortage in the USSR.

Soviet educational research is also much less quantitative and much more descriptive than Westerners are accustomed to reading. Rarely do Soviet educational journals carry an article with even a single table of data, and statistical-significance tests of any sort are simply not part of the landscape. (Some change in this regard is now visible in Soviet sociology, economics, and management studies, but the literature in education is still strikingly discursive.)

A Note on Terminology

Some clarification of the Russian terms used in discussing educational technology and ID may be in order at this point. The term "technical means of instruction" ("tekhnicheskie sredstva obucheniia," or TSO) is commonly used in Soviet parlance in the same way "educational technology" is used in the United States--to stand for hardware, software, and (increasingly) the process of planning for their appropriate use. References to "audio-visual" ("audiovizualnyi") materials occur frequently, and there is a newer term, "screen-sound" ("ekranno-zvukovoi"), which is roughly equivalent. Names for types of hardware are generally parallel in both languages.

Turning to ID, the terminological waters become muddier. The closest one gets to the Western idea of ID is perhaps in the term "pedagogical qualification raising" (Povyshenie pedagogicheskoi Kvalifikatsii"; Veselov and Tinovskii, 1978), but that expression is a rarity. Far more commonly encountered is the simpler "qualification raising" ("povyshenie kvalifikatsii"), which stands for a type of in-service training which includes improvement of both subject-matter expertise and teaching skills. A related notion, "pedagogical mastery" ("pedagogicheskoe masterstvo"), is less popular and appears to have a less-prestigious cachet than "qualification raising." Those persons working with instructors on the design of material or lesson content would likely be called "methodologists" ("metodisty").

THE DEVELOPMENT OF EDUCATIONAL TECHNOLOGY IN THE USSR

It is startling to realize that, until very recently, the school system of the USSR resembled more closely what one would expect to find in a developing nation than what one would attribute to a world superpower. The Soviets have always done a good job of presenting their best face to visitors from abroad, and the casual visitor may be impressed at the high level of technology displayed in the schools. Guests, however, rarely see education at work in the average city school, in the run-of-the-mill, industry-oriented higher educational institute, or in rural schools. Fragmentary anecdotal reports paint a grim picture of insufficient materials and poorly-trained teachers.

Under such conditions of general educational underdevelopment and hardship, then, it is not surprising that the provision of educational technology on a broad scale was only a dream for Soviet planners until recently. Writing in 1973, I. Driga (head of the Ministry of Education's Directorate of Supply to Schools of Visual Aids and Educational Equipment) noted that of 380 schools in the Turkmen Republic in South Central Asia, only 29 (7.6%) had a 16mm projector available. He also indicated that, as of 1968, each film copy had to serve 150 schools, and that by 1971 each film had to serve only 15 schools.

The late 1960s and early 1970s brought a major, officially-backed push to increase the **quantities** of educational equipment and materials available to educational institutions at all levels and to help assure that the **quality** of use improved as well. A lead editorial in **Pravda,** for example, urged teachers to make more careful use of the 150 million rubles (about $225 million) worth of educational equipment provided to educational institutions that year (Zdravstvui, 1975). Official decrees from the Central Committee of the CPSU and the Council of Ministers--the weightiest form of "advice" in a Communist country--demanded in 1972 that higher educational institutions make wider use of educational technology in teaching, and that organizations responsible for providing materials do a better job (O merakh, 1973).

This drive to provide the basic hardware and software of educational technology to Soviet educators is thus a very recent phenomenon, and it continues today with the introduction of an increasing variety of equipment. It therefore

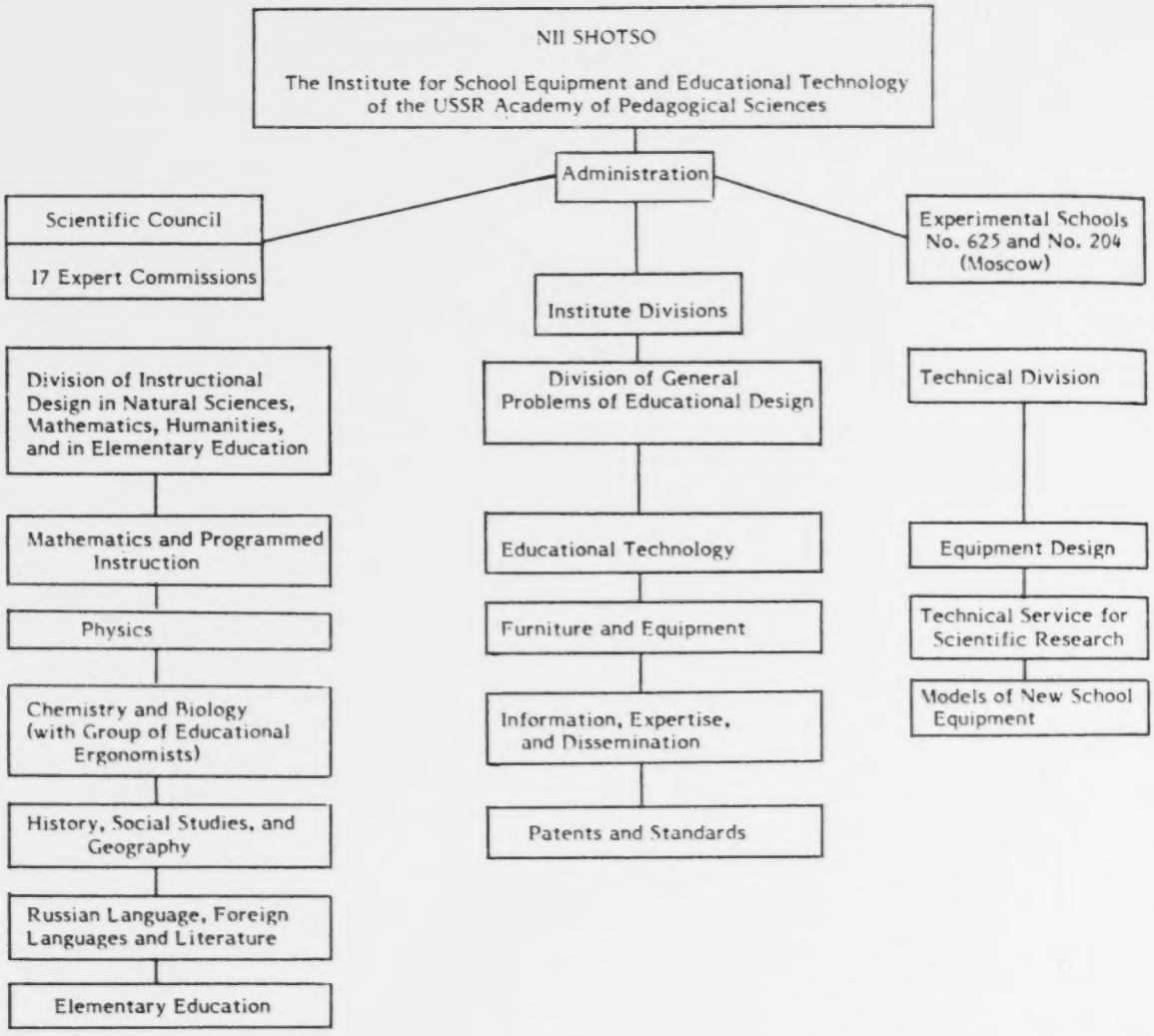
NII SHOTSO
The Institute for School Equipment and Educational Technology of the USSR Academy of Pedagogical Sciences
Administration
Scientific Council
17 Expert Commissions
Experimental Schools No. 625 and No. 204 (Moscow)
Institute Divisions
Division of Instructional Design in Natural Sciences, Mathematics, Humanities, and in Elementary Education
Division of General Problems of Educational Design
Technical Division
Mathematics and Programmed Instruction
Physics
Chemistry and Biology (with Group of Educational Ergonomists)
History, Social Studies, and Geography
Russian Language, Foreign Languages and Literature
Elementary Education
Educational Technology
Furniture and Equipment
Information, Expertise, and Dissemination
Patents and Standards
Equipment Design
Technical Service for Scientific Research
Models of New School Equipment

Figure 36-1. Organizational structure of the Institute for School Equipment and Educational Technology of the USSR Academy of Pedagogical Sciences.

makes sense to examine here in some detail one of the agencies responsible for this significant change in educational practice.

NII SHOTSHO: THE INSTITUTE FOR SCHOOL EQUIPMENT AND EDUCATIONAL TECHNOLOGY

The Scientific Research Institute for School Equipment and Educational Technology ("NII SHOTSO") is one of the research and development institutes associated with the Academy of Pedagogical Sciences of the USSR. The institute was created for the express purpose of developing both materials and equipment (including furniture) for schools in the K-10 educational system. Figure 36-1 shows the formal structure of the institute.

The figure identifies the three main functions that SHOTSO fulfills in the Soviet educational system: instructional design of materials to be used in elementary and general secondary schools in all subject areas; technical design of audio-visual equipment of all sorts; and dissemination and planning activities connected with both instruc-

tional and technical design. Each of these areas will be dealt with in further detail below.[1]

Instructional Design. The instructional design functions of SHOTSO are truly staggering: here is an institute with a relatively small staff working on ID problems, responsible for developing supplementary and some textual materials for teachers in 150,000 schools around the largest country in the world. As Figure 36-1 indicates, the development functions of SHOTSO are divided into five specialized secondary areas (math, physics, etc.) and one area focusing on elementary education. Proposals for new materials may be developed internally, or they may be channeled to the institute from a ministry, or submitted directly by teachers. In any event, the Scientific Commission meets once a month and considers specific proposals for both materials and equipment. Approved proposals are then sent to "Expert Commissions" having responsibility for a particular type of material. (Film, slide, and transparency proposals, for example, are sent to a "Screen Commission," which meets weekly.) SHOTSO develops scripts and story boards only; actual production is left to one of a number of film studios and production groups; their producers work with the institute in creating the final product.

The Instructional Design Division also concentrates some of its efforts upon the preparation of print materials--teachers's guides, unusual textbooks, graphics, and the like. SHOTSO staff justify this stress upon print materials by pointing to the heavy use these items get in schools and their relatively low cost in comparison to films and other media (Zel'manova and Maurina, 1978; Volovich, 1979). Development of non-print materials, however, clearly lies at the core of the institute's tasks. There is a kind of non-rational enthusiasm for media **qua** media that can readily be discerned in staff members' remarks: "These materials represent the best current scientific thinking about education;" "Media speak to young people in their native language; they meet the demands of the current generation."

The overall purpose that the SHOTSO staff see in their instructional development work is not entertainment, **per se,** but rather a degree of involvement sufficient to encourage the necessary exposure of youth to printed texts and to the classics of literature. Too, the oft-noted requirements that materials be practical, that they contribute to concrete results in the classroom, means that nothing is produced with indefinite purposes in mind. Indeed, the level of scrutiny which is focussed upon the development of materials in such fields as social studies, humanities, and history probably exceeds that in the West. Take the case of a pilot version of a film dealing with the origin of various figures of speech in the Russian language: at the start of the film, short passages from varying contexts are heard on the sound track--a newscast, lovers talking in a park. Meanwhile, the screen remains blank except for a single glowing color suffusing the viewing area. The color changes for each voice, green for the lovers, red for the "officialese" of the radio announcer, etc. SHOTSO staff indicated that this approach was seen as quite novel and controversial. They were unsure whether they could justify incorporating these effects into the final, released version of the film.

Obviously, a centrally-determined curriculum for the nation as a whole makes the Instructional Design Division's work much easier. Knowing that all sixth-grade geography classes must cover certain topics during the course of the year, the developers may create their materials secure in the knowledge that, when they are ready, they will be used by a given number of teachers working with a given number of children in a given number of schools.

Technical Design. The Technical Design Division of SHOTSO is responsible for designing audio-visual equipment, developing prototypes of new equipment, and preparing certain types of specialized scientific gear for use in educational research. It also performs an oversight function, checking the quality of films, filmstrips, and other materials produced by outside studios. Proposals for new types of equipment are received and processed in the same way as proposals for new types of instructional materials.

Films and filmstrips (including color and black-and-white, and silent and sound versions of each), together with video tape-recording systems, seem to be the major targets for SHOTSO at present. Filmstrips are obviously cheap (costs: about 31¢ for a black-and-white strip, 46¢ for color) and require relatively little in the way of equipment for use. The Technical Design Division has pioneered in the development of a low-cost, simply-designed filmstrip projector with a minimum number of parts.

The need for such sturdy systems becomes clear if one imagines the size of the country, the relatively crude conditions pertaining in many outlying areas, and the vast numbers of devices and materials which must be manufactured in order to equip all schools even minimally. The estimated production-run for a filmstrip is 90,000 copies, while films are typically produced in editions of 14,000 copies. Although these production-runs are partially explained by the size of the country and

[1] Much of the information regarding the structure and operation of SHOTSO is drawn from the author's conversations with institute staff members during a visit there in January, 1978 and from correspondence over the period 1974-1980. Published commentaries by SHOTSO's director, S. G. Shapovalenko (1976; Iubileinaia, 1978) provide additional data on the institute's activities.

of the educational system, they are also partially an artifact of centralized planning: if every tenth-grade social studies class is to see a film about the Soviet Constitution, they will all likely see that film within a span of a few weeks. The tenfold reduction in the ratio of film copies to schools from 1:150 to 1:15, cited earlier, is an attempt to ameliorate the problems created by this situation.

Soviet educators have been enthusiastic about television for many years, but have been hindered in their use of it by a lack of reliable, locally-produced video tape recorders. The wide-scale introduction of these devices was begun only in 1979, and promised to free teachers eventually from centrally-determined schedules for broadcasting to schools (Zaznobina and Pressman, 1979).

Dissemination and Planning. In a centralized system, planning obviously assumes a high level of importance. And, when innovation, by definition, comes from the top down (or must at least be channeled through the top in order eventually to make its way down), dissemination also becomes critical. The Division of General Problems of Educational Design, then, plays a key role in seeing that new materials and equipment are carefully planned for and then actually used.

Dissemination activities, in the form of special teacher training programs, are conducted both in Moscow and around the country. SHOTSO itself has several schools affiliated with it for developmental testing of materials and equipment. In one of those schools, 5000 teachers each year are given instruction about educational technology; they also get a chance to see new materials actually being used by teachers in those schools.

The staff of SHOTSO also communicate their ideas through scholarly publications. Although there is no regular Soviet periodical on educational technology, relevant articles do appear in such journals as Soviet Pedagogy (Sovetskaia pedagogika; a general periodical on problems of education), National Education (Narodnoe obrazovanie; a magazine intended for teachers and principals), Higher Education Courier (Vestnik vysshei shkoly; a general journal on higher education), and Questions of Psychology (Voprosy psikhologii; a journal focusing on issues in research psychology). There is also a variety of field-specific journals intended for secondary school teachers which comment regularly upon the use of educational technology (e.g., Chemistry in the School). Other publication avenues include conference proceedings (e.g., Piatia, 1969), and general or subject-specific books authored by SHOTSO staff members (e.g., Poltorak, 1976; Vestitskii, 1977; Pressman, 1972, 1979).[2]

Pre- and In-Service Teacher Education

In addition to SHOTSO's activities, there are various other ways in which teachers in the USSR learn about educational technology. Teachers-in-training must take a course on audio-visual techniques, involving about 32-40 hours of classroom contact, as part of their pre-service preparation. In addition, they are expected to learn how to use equipment during their training, and to demonstrate their knowledge by including the use of educational technology in one-third to one-half of the sample lessons they give before graduating. The certification exam given to new teachers must include questions on the use of media, and a teacher is expected to know key items from a catalog of materials in her or his subject-area.

Even after graduation, the stress upon educational technology continues. Teachers throughout the country are required to take in-service courses in both subject-areas and methodology at least once every five years (this is part of the "qualification raising" system to be discussed later). These courses usually take place at "Teacher Improvement Institutes," which in turn stay in touch with SHOTSO and other agencies for the latest information. Regional departments of education can give teachers one free in-service day per year to work on new teaching methods, and higher-level educational bodies can give up to a month's leave for special projects involving methods. For some, there is an immediate practical payoff; these courses can lead to the awarding of special permits which are needed in order to obtain films and even for permission to operate projectors. The bureaucratic element here should not be ignored, but neither should the practical necessity of protecting hardware and software in a country that until very recently has had little enough of either.

Local departments of education also employ staff members whose sole duty it is to act as curriculum or instructional developers. The Russian term for them, "methodologist," however, does not connote in the Soviet context so much a separate job description, or special status, which is different from that of a teacher; rather, it indicates that these are especially experienced and able teachers who are recognized as providers-of-information concerning the teaching of the particular fields in which they themselves have taught for a number of years. As methodologists, however, they would be expected to demonstrate competence with a wide variety of teaching techniques

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[2] The lack of a journal devoted exclusively to educational technology may seem strange to those accustomed to the plethora of specialized publications available in the USA and Europe. In the USSR, however, it is the norm to have relatively few periodicals in any given field. Sociology, for example, had to make do with publishing its articles in philosophy and psychology journals for the ten-year period following its official recognition as a discipline in the Soviet Union in the mid-1960s.

and would also be expected to know a good deal about educational technology.

After proceeding through subsidiary ranks of "Senior Teacher" and "methodologist," a teacher might eventually aspire to an appointment at the top of the methodological tree as an "Honored Teacher of the USSR." Somewhat equivalent to being named "Teacher of the Year," the title brings with it the special economic plums (improved pensions, access to scarce imported goods, etc.) on which Soviet society often seems to run. The title, established in 1977, does seem to indicate some relatively high level of pedagogic expertise (or at least a high level of concern for their students' welfare).

The impression should not be given, however, that Soviet educators have met with nothing but successes in their attempts to encourage a wider use of technology in the schools. Indeed, the extensive efforts being devoted to improving the teaching methodology at the present time hints at the existence of deep underlying problems: boredom and disinterest on the part of students; uninspired teaching on the part of teachers; poorly organized and administered school systems in many parts of the country. (See Smith, 1976 and Kaiser, 1976 for some revealing anecdotal comments about the current state of Soviet education.) Such difficulties are rarely discussed in the Soviet press, but occasionally some candid comments do appear. Evdokimov (1973), for example, criticized the use some teachers make of media-as-entertainment:

> Unfortunately, there are cases in which educational technology is used only for an external effect. Then the use of technology turns into an end in itself, and the attitude of the pupils toward such a "spectacle" is most disrespectful and thoughtless.

Other Educational Technology Organizations

Organizations Working with the K-10 Schools. SHOTSO is not the only group in the USSR involved in educational technology on the national level. While it is responsible for the development of the technology to be used in the schools, there are other agencies which also play a role. The Academy of Pedagogical Sciences' Institute of General and Educational Psychology continues to devote considerable attention to such problems as programmed instruction and "algorithmization." And the Academy's Institute of Content and Methods of Instruction is involved in the specification and design of texts for individual subject-areas.

Organizations Working with Higher Education. There are also various groups working on hardware and software for use in higher education. Such materials and devices may be developed by the Ministry of Higher and Specialized Secondary Education's Institute for Problems of Higher Education, or perhaps by the Ministry's Special Design Bureau (Spetsial'noe konstruktor skoe biuro). In operation for 27 years, the Bureau is charged with developing such diverse materials as models, teaching machines, charts, laboratory gear, and special auditorium display arrangements (Nad chem, 1978).

The coordination of planning, production, and use of instructional television in higher education is carried out through a special Scientific-Methodological Council on ITV. The council's responsibilities also include the design and specification of standards for television facilities in institutions of higher education (Antipin, 1978). The production of films for use in higher education in the past was generally handled through a centralized service, USSR University Film (Soiuzvuzfilm); some institutions, however, have had problems in getting the services they needed and have begun to turn to other, non-university, film organizations such as Leningrad Scientific Film (Shamrai and Krasiuk, 1978). Finally, the increasing number of Soviet higher educational institutions and the complexity of meeting all their needs for audio-visual equipment were some of the factors apparently responsible for the creation of a centralized equipment production group, USSR University Equipment (Soiuzvuzpribor), in 1980 (Krasnov, 1980).

Other groups within the higher educational establishment which are involved in design and production work include various institutes, and universities themselves (especially polytechnical institutes, such as those in Kiev and Riga, and scientific institutes, such as the Moscow Energy Institute), together with research institutes concerned with cybernetics (which report to the USSR Academy of Sciences or to the smaller academies in the various union republics). These latter groups have been active in promoting the development of programmed instruction and of what are called "automated learning systems."

In addition to strong traditional foci on the use of films, television, and programmed instruction, Soviet higher education has recently witnessed a strong move toward the use of what might be called "static-dynamic displays." Using a variety of still media (slides, overhead transparencies, etc.), graphic materials representing a schematic view of a chemical formula or engineering process are presented on one screen, while film or television presentations displayed simultaneously on another screen illustrate the activity being summarized in the schematic (Koronatova, Nikandrova, Rau, and Khaliullina, 1976; Krasnov, 1980; Provada, chegodaeva, and Romanovskaia, 1980).

In spite of the high degree of centralization implied by the existence of so many country-wide production and design groups, the development of materials and equipment for use in higher education seems to proceed less systematically and more eccentrically than does that developed for use in general public education. Publication of editorials

calling for the improved centralized production and dissemination of equipment, in such leading newspapers as Izvestia, testifies to the importance attached to such planning by Soviet educational leaders (Krasnov, 1976b). Likewise, such testimony is provided by the major exhibits of technological gear, which are staged in central locations (e.g., at the Moscow Exhibition of Achievements of the National Economy), and by the special programs which are conducted there for the administrative and teaching staff from higher educational institutions. At one such recent hardware display, some 150 specialized tours and seminars were held for the higher education community during the two weeks of the exhibit (Samokhvalova, 1980).

Unfortunately, the extreme specifications of Soviet higher education militates against the creation of equipment which can easily be adapted to a variety of situations. Many of the devices displayed in exhibits or discussed in journals remain "one-of-a-kind" examples or, at best, are parts of very limited production runs. Regular production of all but the simplest types of audio-visual equipment seems to sorely tax the Soviet industrial ingenuity; as in other sectors of the economy, shortages of parts and of skilled manpower to repair equipment are to be expected.

But the commitment of the regime to increasing the technological framework for both general K-10 and higher education should not be underestimated. Although the problems noted above are serious ones, so also are the achievements in this area impressive. The support for educational policies encouraging the broader use of technology comes neither from empirical data on the general effectiveness of media, nor from evaluative studies of the impact of particular programs, but rather from a simple, often-repeated set of value claims: "We **believe** that a technological approach is more stimulating for students, that it increases the effectiveness of education overall, that it frees teachers from routine and uncreative work, and that it is necessary for the future of education in our country. Therefore, we declare this to be the way in which education **should** be conducted." Value claims, however, will not by themselves change human behavior. For that, a more complex system of in-service faculty- and instructional-development programs is needed, and it is to this system that the next section of this chapter turns.

TEACHING THE CAT TO LIKE MUSTARD: INSTRUCTIONAL DEVELOPMENT IN THE USSR

"There are two ways to get faculty members in higher education to attend to the quality of their teaching," says M.K. Poltev, Head of Directorate of Qualification Raising of the USSR Ministry of Higher and Specialized Secondary Education. "The first is to handle them the way Peter the Great handled his nobles: order them to line up, and stand there with a scissors ready to snip off their beards as they walk by.[3] The second method is the way you teach a cat how to like mustard: you put a little on the cat's tail. At first, the cat doesn't like the taste but, being a naturally fastidious animal, it realizes that licking the mustard off will ultimately be in its best interest. After a while, the cat will come to not mind the taste, and in fact will eat mustard quite readily" (Poltev, Note 1).

This pair of droll analogies illustrates well the dilemma of instructional and faculty development in the Soviet context: on the one hand, the administrative bureaucracy of higher education is in a position to "compel" faculty members to use new methods of teaching, to update their expertise in their disciplines, and to improve their teaching skills. But while such an approach may produce impressive statistics for five-year-plan reports, it is not likely to generate willing, much less enthusiastic, compliance. For that, a less directive approach that appeals to the natural interests of the individual faculty member is called for. The system of "qualification raising" used in Soviet higher educational institutions includes elements of both approaches.

"QUALIFICATION RAISING" IN SOVIET HIGHER EDUCATION (FACULTY DEVELOPMENT)

"Organization of Qualification-Raising Programs." Some 500 "qualification raising" departments are located in the nation's universities and institutes; there are an additional 165 separate "qualification-raising" institutes attached to union- or republic-level ministries and other agencies and single "qualification-raising" courses are conducted by 400 smaller official groups. Some two million people participate in the "qualification-raising" program every year (Krasnov, 1979a).

Within individual higher educational institutions, a dean supervises "qualification-raising" programs and courses, and draws upon the established, older faculty members of the school who serve as mentors and supervisors for visiting faculty members. "Course" is a somewhat misleading term, for the "qualification-raising" system more closely resembles an arrangement of individual tutorials and managed independent study

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[3]Peter I, also known as "the Great," ruled the Russian Empire from 1682 to 1725. An intrepid "Westernizer," Peter first brought many contemporary European innovations to Russia--architecture, ship building, printing, and other applied fields flourished in new ways under his regime. One of his reforms involved the altering of the antiquated clothing and hair styles of the nobility so as to mirror those of the West, a change stoutly resisted by the nobles but rigidly enforced by Peter.

than it does a formal academic course. Some topics, notably teaching methods, educational psychology, and the use of educational technology, are frequently introduced in a large lecture held for faculty members from all fields, but most of the work is done independently.

"Qualification raising" programs generally fall into one of three categories: (a) Specialty programs, for young or very inexperienced faculty members, are essentially further substantive work in the person's field. Such programs would likely involve the study of specific new content needed to complete or update one's knowledge of a discipline, perhaps with additional individual work conducted in conjunction with the senior faculty to enable the novice to see "what the field is." (b) Methodological programs deal with what Westerners would usually call curriculum: what subject-matter to stress in a course, how to pace individual units, how to integrate new subject-matter and so on. Questions of course design and some ID concerns would figure importantly in these programs. (c) Pedagogical programs deal with both nitty-gritty teaching skills and with broader questions of educational psychology, and with theories of perception and communication as applied to teaching in particular disciplines. The design and creation of new hardware systems, of new materials, or of course-specific instructional sequences would be included in pedagogical programs. Recently, the planned, rational use of educational technology has figured prominently in discussions of what content should be included in qualification-raising programs (Miseiuk, 1980).

The national coordination of the qualification-raising effort is handled through the Ministry of Higher and Specialized Secondary Education in Moscow. Within the Directorate of Qualification Raising, 11 divisions work on the problem, with five of these having a direct relation to ID and faculty development. These five include the division of Educational Film, of Instructional Television, of Educational Technology and Laboratories, of Faculty in Higher Education, and of The Scientific Organization of Education. (The last deals with many administrative problems, but also has devoted some efforts to the development of systems models for Soviet education--see, for example, Batyshev, 1972).

As is the case with the educational materials and equipment industry discussed above, qualification raising has been the target of intensive improvement efforts over the past decade. The USSR Minister of Higher and Specialized Secondary Education, V.P. Eliutin, noted the need to encourage faculty members to plan for teaching more carefully, and asserted that "the growth of technology has changed in a fundamental way the whole situation in higher education" (1980). N.F. Krasnov, First Deputy Minister and a frequent commentator on qualification raising and educational technology, urged the development of a stronger theoretical and empirical basis for the qualification-raising system (1976a, 1979b). And, as with all areas of life in the USSR, there are the ubiquitous Central Committee resolutions, reminding everyone involved of the seriousness with which these matters are viewed by the country's leadership (O dal'neishem, 1978).

The qualification-raising system has been in effect for several years now, and problems stemming from the system's maturity have recently become apparent to deans and other program administrators. Although qualification raising programs are in one sense individualized to meet the needs of each faculty member, the patterns in fact are apparently quite standardized, with each instructor's program looking much like everyone else's. And, since all of the faculty members are supposed to work through the system on a five-year cycle, there is concern that those coming back for their third round may become bored or dissatisfied because of repetition. Institutions have accordingly been advised to begin taking a more individualized approach toward program design (Semin, 1980).

Qualification Raising and the Faculty Member. The qualification-raising system is tied closely to the systems for faculty evaluation and for the use of sabbatical and leave periods. After a five-year probationary period, new faculty members are evaluated. Various types of evidence, including reports of classroom visits by department heads and colleagues and departmental recommendations play roles in this process. (Students' evaluative comments on their instructors' performances do not usually play a part in this process, although some higher educational institutions in the USSR have experimented with student course evaluations [Kusnetsova, Gavriushov and Korol'kova, 1976].

Although there is sometimes an outright denial of a continuing contract following a five-year evaluation, a more usual outcome is a recommendation that the faculty member either attend a qualification-raising program (to improve her/his teaching skills or to add to her/his theoretical knowledge of her/his discipline) or that s/he participate in a leave-cum-internship, or "stazhirovka" (to update her/his practical knowledge of the field). Either of these options may also be chosen voluntarily by more senior faculty members, who in any event are obligated to undertake four months of either leave or qualification raising every five years (Semin, 1980).

Before embarking upon either a leave or a qualification-raising program, the faculty member and her/his department head may draw up an agreement specifying what the faculty member will accomplish during this time (Gorshenev, 1978). Faculty members interested in materials design would likely either arrange a program at an institution where such materials are regularly created, or perhaps work out an "apprenticeship" with a known developer at a major institution.

Qualification Raising on the Local Level. It may be valuable to examine briefly a number of specific cases of how qualification-raising pro-

grams and ID-type activities are handled. At the Moscow Energy Institute (one of the institutions examined by American educator Bryce Zender in the late 1960s; Zender, 1972a), the qualification-raising programs enroll some 300 participants from other higher educational institutions each year. Each participant develops a plan which includes about 36 hours of in-class lectures and 26-28 hours of out-of-class exercises, leading to a "graduation project." Some of these projects (eight during one semester in 1978, for example) focus upon improving the participant's use of educational technology in teaching situations. Each program also involves the presentation of lecture "fragments" to peers for their critique, combined with feedback from their peers on the quality of lecture materials and handouts (Grigor'ev and Danilov, 1979).

A similar program is conducted at Kazan University, which includes required practice in the use of educational technology and which allows the optional selection of that area as a topic for projects (Shurtakova, 1979).

The qualification-raising program at the USSR Machine Construction Institute is based upon what Western educators would probably call a "lab" system. A variety of self-instructional materials, reading lists, and audio-visual equipment is provided in a separate room. Qualification-raising participants are encouraged to use the equipment and to engage in group consultation exercises under the direction of special instructors who are assigned to the lab. Participants also use the lab to create their own teaching materials (Perfilov, 1979).

Soviet educators also stress the value of qualification raising for new faculty members and graduate students who are on their way to becoming faculty members. At the new Brest Construction Engineering Institute, all 400 faculty members managed to participate in qualification-raising programs during the first five years of the institute's existence (Belogortsev, 1978). And the Briansk Transport Equipment Construction Institute offered a program for its graduate students on "Teaching in Higher Education." The course required students to attend lectures and seminars, and also involved "methodological" exercises (lecture planning) and "pedagogical" exercises (designing lab instructions or student assignments) (Bulgaev and Lagerev, 1979).

Although there have been official pleas for a more compehensive theoretical and empirical knowledge base for the support of qualification raising, most of the content seems to be purely applied. One of the few Soviet educators who is working on a learning theory which might provide more of a depth in theory is V.P. Bespal'ko, who has proposed a hierarchy of learning types and a system for matching instructional variables with each of the levels of the hierarchy (1977).

Problems with the Qualification-Raising System. But while the qualification-raising system seems admirably efficient and well-designed, there are occasional hints that it does not work as perfectly as the official statements would have one believe. It is apparent, for example, that university faculties are not overwhelming Soviet media centers with demands for equipment. If the demand were high, there would be no need for the Higher Education Courier (the only journal on higher education in the USSR) to publish, month after month, a series of articles under the heading "Use Educational Technology More Widely!" And, if all faculty members are **supposed** to participate in qualification raising every five years, why is an institution celebrated so thoroughly in the press when it actually meets this goal? The real level of faculty participation, one may infer, is probably far lower.

V.I. Zuev, a teacher at the USSR Institute of Economics and Finance, discussed the institute's qualification-raising program (a "lab" system not unlike that at the Machine Construction Institute), and also provided a rare candid glimpse of the problems of qualification raising in action.

> The creation and operation of an education lab in higher education is a difficult process. In particular, we had to overcome a psychological barrier that hindered many teachers from using contemporary educational technology more widely in classes.

Demonstration lectures using educational technology and computers, he suggested, may provide an effective way of dealing with faculty resistance (Zuev, 1979).

The Tashkent Polytechnic Institute tried another method for kindling faculty interest in the use of educational technology. After the Institute's Methodological Council proved unable to spur sufficiently high interest in new teaching methods, the administration arranged a yearly contest in which departments competed with one another. Departments won points for such things as the number of classrooms retrofitted for the use of educational technology, the number of times such halls were used, the number of teachers actively using media, the number of films shown, and so on. Departments were also "fined" points for not using the equipment they had on hand. All this apparently helped "pervade the entire educational process with educational technology" quickly and on a broad scale (Kulikov and Shustrov, 1979). The authors do not say, however, if the new policy promoted the sort of rational and carefully planned use that higher education officials have been demanding lately.

Other ID-Type Organizations

In addition to the massive national qualification-raising system, there are several organizations which are concerned with ID issues in other ways. Three of them bear mention here: the Young Lecturers Schools; the Institute of Problems of

Higher Education; and the Scientific Organization of Educational Work movement.

Young Lecturer's School. Many universities initiate their own courses for young faculty members under the title "Young Lecturer's School" ("Shkola molodogo lektora") or "Educational Improvement School" ("Shkola pedagogiches-kogo masterstva"). Such courses include sessions aimed at increasing the faculty member's level of awareness concerning the importance of teaching and of teaching improvements. There is some evidence, however, that these schools may serve as vehicles for socializing new faculty members in terms of the political and ethical climate of Soviet higher education through the heavy emphasis placed upon political content; two authors indicate that one of the main reasons that faculty members attend such schools is to enable them to become more effective "propagandists for Communist ideas" (Boleev and Moldakasov, 1979).

The Institute for Problems of Higher Education. The Moscow-based Institute for Problems of Higher Education (NII vysshei shkoly) has two departments which deal with teaching research and improvement: The Department of Scientific Organization of the Teaching Process, and the Department of Theory and Methods of Instruction. Within the former, separate sectors are concerned with Educational Film and Television, with Instructional Systems, and with the Planning and Control of the Teaching Process. Because the institute was recently formed (in 1976), its research and development programs are just now beginning to come to fruition.

Scientific Organization of Pedagogical Work. Another important factor related to ID in the Soviet context is the movement toward increased pedagogical efficiency known as the "Scientific Organization of Pedagogical Work," or by its Russian acronym "NOPT" ("Nauchnaia organizatsiia pedagogicheskogo truda"). An outgrowth of a more general, long-standing Soviet school of thought known simply as "Scientific Organization of Work" (or "NOT"), NOPT is concerned with defining efficiency standards, promulgating them, and measuring the results. NOT had its origins in the Taylorism popular in the United States earlier in this century. Recently, both NOT and NOPT have come more to the fore as Soviet social scientists have begun to apply more quantitative measures to their analyses of the workplace (see Lieberstein, 1975, and Fleron, 1977, on the development of NOT in the USSR).

The NOPT movement is perhaps best illustrated in the works of I.P. Rachenko, an educator and psychologist who founded a NOPT laboratory in Piatigorsk in the late 1960's. Rachenko, himself a prolific writer and developer, defined NOPT as the coordination of four key elements: (a) the process of teaching and upbringing; (b) the quality and preparation of teachers; (c) the role of parents and others who are in contact with the student; (d) the material and technical bases for instruction (Rachenko, 1972). Other of Rachenko's studies investigated teachers' feelings of competence or incompetence with regard to specific teaching tasks (lecturing, leading discussions, grading essays, etc.; predictably, confidence went down swiftly as teachers moved into non-lecture activities). In another study, he examined student learning outcomes and related these to teacher participation in a variety of qualification-raising courses. Batyshev (1972) also devotes considerable attention to the role of technology in encouraging NOPT.

This focus upon systematic planning is relatively new in Soviet higher education, and it seems to have been adopted with more enthusiasm by administrators than by their faculties. As more computers make their way into Soviet life, the number of references in higher education publications to "automated management and control systems" is bound to increase.

SOVIET AND AMERICAN EDUCATIONAL TECHNOLOGISTS' MUTUAL MISPERCEPTIONS

As this paper draws toward a close, it makes sense to ask what educational technologists and instructional developers both in the USA and in the USSR know about each other's work. The reason this makes sense is because there may be ways in which each group could learn from the other, and because present opportunities to do so are very limited.

American interest in Soviet educational technology has not been overwhelming. A number of technical reports were published in the 1960's following the launching of Sputnik I and the concomitant fear of Soviet educational superiority (e.g., Schultz, 1964). Zender, an American educator, spent some time as a graduate student in the USSR in the late 1960's and focussed heavily upon the Soviet move toward programmed instruction (1970, 1972a, 1972b). And a dissertation by Mozes (1979) explored in depth a number of the more recent developments in Soviet educational technology. Publication in English of works on algorithmization by Landa (1974, 1976; formerly of the Academy of Pedagogical Science's Institute of General and Educational Psychology) and on computers by Berg (Zender, 1975) has brought some Soviet efforts to the attention of Western educators.

And what do Soviet educational technologists know of American efforts? Conversations with members of various institutes and information from a few published articles show that they are somewhat aware of what is happening outside of their own country. What they seem to admire most about education in the United States is the technological sophistication of the equipment which is so widely available. An exhibit in Moscow in 1973 which included products from U.S. and West European manufacturers, drew rave reviews from a

Soviet visitor (Piskunova, 1974). Other Soviet writers, however, have cited studies showing that ghetto schools in the U.S. are less well equipped than are suburban schools, thus "proving" once again the Marxist hypotheses about the exploitative nature of capitalistic society (Il'ina, 1971).

Most puzzling for Soviet educators is the strong focus upon objectives in American educational technology (Kosmodem'ianskaia, 1973; Pressman, 1979). This is perhaps understandable for educators who have spent all their professional lives in a system in which objectives are defined near the top of the educational hierarchy and in which relatively little latitude is left for the individual teacher. What interests them in American research and development is work on learning theory, hierarchies of learning and instruction, the teaching of thinking skills, and cognitive information processing. These, in the Soviet view, are all inextricably linked to the improvement of instruction.

As far as this author knows, no one has ever conducted a joint American-Soviet research or development project in educational technology. While current political problems make such ventures difficult to arrange, it would seem that there might be benefits for each side: Soviet educators would gain insights into the systematic planning and design processes at which the United States seems to excel, and they would also likely be interested in current work being conducted in cognitive development and the use of media. American instructional developers have already shown an interest in the work Soviet researchers have done on algorithmization, and it would seem that they could also benefit by studying the Soviet research style with its use of more naturalistic settings and its greater concern with processes as opposed to outcomes.

INNOVATION ON COMMAND? THE DIRECTION OF INSTRUCTIONAL DEVELOPMENT IN THE USSR

The Frame of Analysis

There is a temptation, in trying to assess the overall impact of the Soviet instructional development program and the probability of its future success, to apply what we know from our own experience in the West. A reasonable approach, for example, would be to take those perspectives on innovation in educational systems developed by such researchers as Rogers and Havelock, and use them to chart the processes by which the Soviet ID program has been prepared, promulgated, accepted, or resisted. Using this approach we might conclude that the Soviet effort has been clumsy and ill-fated on several counts: there seems to have been little participation by affected parties in determining the scope or the content of the program, for example, and there is little opportunity for local adaptation or modification of the changes proposed by the national system. Other conditions supposedly helpful to the adoption of innovations are also absent.

But to use this sort of framework for a concluding analysis would be simply to don a set of cultural glasses that may focus attention on what are, in fact, insignificant features of the ID-innovation process when it is conducted within a context such as that of the Soviets. Broad public participation in policy making has never been a characteristic of either pre-revolutionary Russia or of the Soviet system. Yet, Western scholars now seem more convinced than previously that policies in the USSR are not made in an information vacuum--there are ways in which groups formulate and express their interests on important matters before and after decisions are made (Hough and Fainsod, 1979; Skilling and Griffiths, 1971. For discussions of the ways in which special-interest groups act with respect to educational decisions, see Bruce, 1976, and Kerr, in press). To fault Soviet ID programs for apparently not involving higher educational faculty members in goal setting, then, would be inappropriate, for the views of that constituency have likely been taken into account in some fashion, although probably not in the same way to which Westerners would be accustomed. What is needed is an analysis which examines the programs and their potential within their own contexts.

SUMMARY: THE SCOPE OF SOVIET ID

This chapter has considered the creation and growth over the past decade of an intensive, two-pronged effort in instructional development in the USSR. One part of that effort has been substantial investment in the design, production, and dissemination of both the materials and the equipment of educational technology, combined with a sometimes strident campaign to encourage educators to use these resources. The second part of the ID push has been a striking expansion of the program of qualification raising, a program designed to help faculty members in higher education to expand their repertoires of teaching styles and to create a system of higher education which is both minimally satisfying to students and maximally productive for the national economy and society.

The Educational Technology Program. During the past decade, the Soviet educational establishment has taken massive steps in equipping educational institutions at all levels with basic audio-visual equipment. Overhead projectors, film and filmstrip projectors, TV systems, and a variety of programmed instruction devices are now much more widely available than they were ten years ago. While their design would seem plain or even primitive to Western eyes, their presence in Soviet classrooms is hailed as an achievement and is viewed as a significant contribution to more effective teaching and learning.

Likewise, the software to use with the new technology, if not yet commonplace, are at least

no longer the remarkable rarities they were earlier. Too, significant numbers of educators, especially in higher education, are apparently becoming involved in the design and development of materials.

Finally, teachers are encouraged through newspapers and journal articles, and through a variety of pre- and in-service training programs, to use the new technology carefully and intensively in education. The high level of energy which continues to be expended in this campaign, however, suggests that there may be more than a few laggards.

The Qualification-Raising Program. Especially in higher education, faculty members are expected to spend three or four months very five years in a qualification-raising program. While these programs (similar to contracts involving faculty members and their departments) involve heavy doses of basic theory and application within the participant's discipline, they also include the study of materials on teaching skills, systematic lesson or lecture design, and the use of educational technology.

The success of these programs is hard to judge accurately. The volume of participants is high, but the content often appears to be extremely discipline-specific and may involve a good deal of basic up-grading of the participant's knowledge of her/his field to enable faculty members from regional institutes to provide at least a modicum of up-to-date information to their students.

THE FUTURE OF SOVIET INSTRUCTIONAL DEVELOPMENT

What factors act to help and hinder the Soviet ID program as it moves into its second decade? Several have been noted throughout the present discussion, but it makes sense to recapitulate these with an eye toward their projection.

Popular Enthusiasm for Science and Technology. Certainly the enthusiasm for science and technology which infuses Soviet life bodes well for the future of ID in the USSR. The NOPT movement and the heavy focus upon automated learning systems and automated management systems are genuine expressions of an interest which goes beneath the level of propaganda. There is a fascination for the new and the technical that Soviet hosts often inflict unabashedly upon their Western guests, taking them to see only the latest, the newest, the best-equipped schools and classrooms. Russians, like Americans, are often tinkerers and gadgeteers, and this approach spills over into education.

The Possibility of Centralized Command. In a centralized society, decisions can be made, institutes created, resources committed and programs developed on a national scale without extensive prior public debate. Local curriculum development problems are largely eliminated when curriculum is essentially equivalent across the country. Also, the peculiar nature of the Soviet political reality militates against any strong criticism once a program is in place (although clearly unsuccessful programs may be withdrawn, also without public discussion). The obviously strong intention of the regime to implement the ID program--an intention apparently based upon assumptions concerning the usefulness of educational technology and of the qualification raising program which are founded upon normative rather than empirical value claims--will allow it to move ahead rapidly in this field. Similarly, academics who know that their success in obtaining tenure, advancement, and (more importantly, within the Soviet context) the material comforts which the state provides its favored performers, are dependent upon their participation in the ID system will be likely to give that system at least its minimal due.

The Impossibility of Centralized Command. On the other hand, there are a number of ways which the Soviet system hinders the programs it would like to carry out. Bureaucratic in-fighting in the educational establishment is, if anything, fiercer than it would be in the West because of the lack of open discussion and of access to information. The extreme specialization of the Soviet higher educational system seems to exacerbate this problem. This leads to inefficiency in implementing the ID program. The large numbers of union-level advisory councils and production boards established over the past few years as may well be the frustrated regime's attempt to encourage greater inter-institutional cooperation. Whether more bureaucracy can cure bureaucratic problems is open to question, but past Soviet (or American) experience casts doubt upon this proposition. Bureaucratization, then, may slow the implementation of the ID program in the USSR.

The Traditions of Higher Education. It must also be borne in mind that the Soviet higher educational system is much more like the nineteenth-century European system than it is like the twentieth-century systems of either Europe or America. Lecturing is still a much stronger norm for Soviet educators to break than it now is for their Western counterparts. Also, Soviet academics (especially those holding the scarce titles of "doctor" or "academician") are held in considerably higher esteem among the general populace than would be the case in the West. (A series of surveys conducted between 1966 and 1975 showed that professions such as "mathematician," "physicist," "engineer," and other roles in the "creative intelligentsia" were ranked by young people at the top of the Soviet prestige scale; Titma, 1975).

The combination of strongly traditional professional norms and high prestige means that Soviet teachers are to some degree immune from demands for change. Their prestige allows them to point to current practices and say, in effect, "look at how highly the public regards our work; we must

be doing a good job." While the regime can order, coerce, and cajole in many areas, it apparently is not willing to incur the wrath of academics on a broad scale by forcing compliance with the ID programs, and will likely continue to depend upon less direct (if sometimes unsubtle) methods for encouraging change. This combination of factors, then, may act as a brake on the spread of ID in the USSR.

CONCLUSION: THE LIKELIHOOD OF A SLOW ADVANCE

The varied forces described above are not in balance. The Western observer would likely give the Soviet ID system only small odds for making a dramatic impact upon Soviet education in the next decade, because the easy advances--the equipping of classrooms with basic hardware and materials--have now been accomplished. What remains is a process of convincing and persuading which will require a considerable administrative sophistication, and many have found the ability to do this to be lacking in Soviet enterprises.

But these problems may not be visible to Soviet educators for some time. The greater availability of educational technology and the willingness of the regime to subsidize qualification raising on a regular basis are such notable improvements over the system as it existed a decade ago that problems inherent in the current system may appear small to those affected. Should teachers in the USSR themselves request ID services which match popular conceptions of technology, services which also respond administratively in a flexible fashion and which provide for the unique position of educators in Soviet society, and if the regime is able and willing to provide and adequately support such a system, then we may begin to see realized the potential for improvement the Soviet educational system is capable of, building upon the present system of instructional development as a foundation. Until that time, the system will remain impressive, but flawed.

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